

**"COMMERCIAL SPACE TRANSPORTATION:  
THE FUTURE IS HERE"**

**REMARKS BY**

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**MARTIN'S CROSSWINDS**

**GREENBELT, MARYLAND**

Good morning. Thank you, Betsy (Tervo) for that very generous introduction. I am really pleased to be here in Maryland as a former resident of Prince George's County and Hyattsville before that. It's like coming home, in a way. Betsy, as the executive vice president of Maryland Space Business Roundtable and the Director of Development and Sustaining Engineering for Computer Sciences Corporation's Space and Earth Technology Systems business, I know you have a lot on your plate. Betsy and I were talking during lunch, and we have a lot of common interests, particularly when it comes to education. Betsy may even like to teach one day. I have a real appreciation for your work in both capacities and I also share your enthusiasm for space education and outreach, which I'll talk about a little later on. **(Note: Tervo is Executive Vice President of MSBR and MSBR's Educational Outreach Chair)**

Several months ago, I was here in Maryland giving a commencement speech at Ascension Lutheran School. I looked out at the audience - at these very eager eyes - and they were right there with me, which is where you want them. You never know whether they will be listening, but they were. I was talking about the imminent possibility of private citizens traveling to space. Then I heard a voice, loud enough for others to hear, say, "I ain't going nowhere, lady." I looked for the source of the voice and saw an 85-year-old grandfather, probably of one of the students. And I thought, "No, you probably aren't."

It is my great pleasure to be here today to talk to the members of the Maryland Space Business Roundtable about the FAA's role to encourage, facilitate, and promote a vibrant commercial launch sector. We all know how important the Maryland business community is to commercial space transportation, and to the military and civil

government agencies in this arena. Over the years, I have had the privilege to foster relationships and work with many of your members.

However I realize for some, that the work of my organization, AST, the FAA's Commercial Space Transportation office, may be somewhat unfamiliar to you. You may not know about the ways the FAA is helping to shape the landscape for the next century of space flight.

This year in particular has been one of spectacular milestones and new beginnings. It has been 20 years since the Commercial Space Launch Act was written and we were first granted the authority to regulate commercial space launch, and never before have we been as busy and seen so much progress in this arena. In 20 years, we have licensed 165 commercial launches with no accidents - quite a feat.

It would have been hard to miss the news about the launch on June 21<sup>st</sup> of SpaceShipOne, a reusable

launch vehicle, designed by Burt Rutan, from Mojave Airport in California. Burt Rutan is president of Scaled Composites. It was the first private, manned vehicle to reach space, and what a day that was. Standing in the desert with so much excitement. It was quite an exciting, monumental moment. For us, this feat represented not only confirmation of the exceptional licensing and safety work done by the staff of AST and Rutan's company, Scaled Composites, but the beginning of a new chapter in commercial space transportation. This historic launch marked the dawn of a new generation of commercial space transportation vehicles, signaling the coming of regular passenger transportation to and from space. After all, space is transportation and we want it to be routine.

Another first for us was the awarding of the first FAA Commercial Astronaut Wings to Mike Melvill who piloted the SpaceShipOne to 328,491 feet. That moment was truly a highlight for me,

and I could see as I was presenting Mike Melvill the first pair of Commercial Astronaut Wings that it was for him too. I just hoped he wouldn't cry or make me cry. It was a really historic moment. The Guinness Book of World Records was there to record the accomplishment. We look forward to awarding the next set of wings to America's next private astronaut. These are just some of the exciting things that are taking place in the space transportation industry. Our Number 1 concern will always be public safety. After all, our mission is to protect the uninvolved public on the ground. A lot of work goes into those flights.

During our 20-year history, FAA/AST has licensed and overseen 165 commercial space launches with an accident-free record. We celebrate this record, but realize it can only be maintained by total commitment to a safety regime that works in cooperation with our partners in the Air Force,

NASA, and industry. Let me tell you about a number of these partnerships.

AST has an ongoing real relationship with the Air Force focused on improving safety at the launch ranges. When I first came into government, I was skeptical of government partnership. But I can tell you, we have a real one. Last year, we established our first field office at Patrick Air Force Base in Florida. Another activity we have been conducting, in partnership with the Air Force, is to develop a single set of safety standards that would apply to launches from federal and non-federal launch sites in the U.S. We think this will be particularly beneficial for new entrants to the market, who can use one set of regulations. I am pleased to say that this rulemaking is progressing.

We have partnered with the Aerospace States Association to look at the elements of a national space vision focused on national economic

interests. We continue to develop a space commerce model with ASA and to jointly raise public awareness about the commercial opportunities that space transportation developments offer.

We continue to work closely with the X Prize Foundation, which anticipates awarding a \$10 million prize before the end of this year - 2004 - to the person or entity that achieves the launch of a privately built and financed vehicle capable of carrying three people to 100 kilometers (62.5 miles), returns to Earth, and repeats the launch with the same vehicle within two weeks.

The X Prize is modeled after the Orteig Prize, which launched Charles Lindbergh to aviation fame. There are currently 27 X Prize competitors from a variety of countries, including the United States, Canada, the United Kingdom, South America, and Romania. Our job in AST is to assist the U.S. competitors in obtaining licenses to conduct

launches in pursuit of the X Prize. We are confident the U.S. competitor will come out ahead.

As I speak to you today, two of the competitors - one in the U.S. and one in Canada - are preparing for upcoming launches in pursuit of the prize. At Mojave Airport, Scaled Composites is getting ready to launch on September 29 and again on October 4 in the hopes of reaching the X Prize goal and doing it before Canada's Da Vinci Project. As the regulatory authority for commercial launches in the U.S., we will be there to monitor the safety of those launches and ensure that all risks to the public on the ground are minimal.

This year, we are expecting to see a marked increase in the number of FAA-licensed launches of both expendable and reusable launch vehicles. We have already overseen this year 11 licensed launches, including three launches of the reusable launch vehicle SpaceShipOne, with up to four more launches before the end of the year. This is an

increase over 2003, when we had eight FAA-licensed launches. This is a cyclical industry. It's no secret to anyone that the industry has been in decline but we see it turning around now. Two-thousand four is our most active year since 1999 and we will likely see more commercial launches in the U.S. this year than either NASA or DoD will conduct.

These are not the only numbers we're excited about. Satellite orders were up last year, almost tripling from the six orders in 2002 to 17 in 2003. More satellites mean more launch opportunities. In addition, U.S. launch revenue for 2004 is projected to be \$575 to \$750 million, compared to 2003 launch revenues of \$529 million.

I spoke briefly about SpaceShipOne, but we've seen other exciting new entrants to the commercial space transportation market. Space Exploration Technologies Corporation, owned by Elon Musk, known as SpaceX, has introduced its Falcon I launch

vehicle, which will conduct its first launch for the Air Force by the end of the year at a price point below \$6 million. Lots of people are holding their breath and waiting for that to happen. At the top of that list, is DoD. We are already working with SpaceX on its planned commercial business for the future. Also, the FAA awarded both the first and second licenses for reusable launch vehicle (RLV) operations - to Scaled Composites for SpaceShipOne and to XCOR Aerospace for its Sphinx manned RLV, respectively. We are also working with Armadillo Aerospace and Rocketplane Ltd., both of which are coming up with new vehicles to compete in the international X Prize competition, which I'll speak about in more detail shortly.

In addition to licensing launches, AST is also responsible for regulating non-federal launch site operations. FAA/AST has previously licensed four non-federal launch sites in the United States - in

California, Florida, Virginia, and Alaska. This year we added a fifth - the Mojave Airport in California - a dual use facility, making it the first inland launch site licensed by AST. At Mojave, the Airport Director, Stu Witt, put on another hat when we issued this license - as spaceport operator. And he was really excited, I can tell you! We are working with other potential launch sites in Oklahoma and New Mexico on their applications. We are starting to see a proliferation of interest in inland launch sites; states see spaceports as a potential area for economic growth.

In the future, we anticipate there will be a network of non-federal launch sites throughout the United States, enabling a commercial launch sector that is responsive to both national needs and emerging applications such as space tourism. We are already seeing companies take advantage of

these potential opportunities by locating near future space launch sites.

It is these new opportunities for orbital and suborbital launches that will create the next giant leap for space transportation. The leap to a commercially-driven and innovative launch sector will empower our progress in space flight. The promise of suborbital, and eventually orbital, space tourism holds benefits for all users of our national aerospace system. The **same** progress that will provide economic benefits through space commerce will also help meet national needs. For instance, the type of routine access to space by RLVs envisioned by the founders of the X Prize Foundation and companies like XCOR embodies many of the same goals sought by NASA and the Defense Department for responsive space access. AST and the industry we serve have already taken several small steps but I assure you, this is only the beginning.

Commercial space transportation represents a critical sector to the U.S. economy and to the states in which commercial space activities exist. AST recently completed a study of where we examined the contributions of commercial space transportation, and other industries space transportation enables, to the nation's economy. We found that in 2002, commercial space transportation and related industries were responsible for more than - get this figure - \$95 billion in economic activity, \$23.5 billion in earnings, and 576,400 jobs. We experience the benefits of space transportation and its related industries daily, such as commercial satellite imagery used for mapping and agriculture, satellite communications that provide us with television, Internet, credit-card purchasing, digital radio, and many other services that are seamlessly integrated into our daily lives.

We expect the number of jobs resulting from commercial space transportation to grow in the future, particularly as some of these new RLV developments come to fruition. In March of this year, *Business Week* magazine named commercial space among the top five innovative industries that could drive a new job boom. How about that? It placed commercial space among telecommunications, biotechnology, nanotechnology, and energy in terms of potential job growth. We were just absolutely thrilled about the prospect of that!

Now, considering the future that lies ahead, many of us were also heartened and excited by President Bush's announcement last January outlining a challenging new vision for our nation's space program, a renewed commitment to boldly pursue knowledge and discovery.

Laying out this new vision for U.S. space exploration does not directly address the future of the commercial launch industry, but I believe

strongly the private sector could have a role if it steps forward to rise to the challenge of the President's call. The Aldridge Commission's report on implementation of this new vision recommends that NASA "recognize and implement a far larger presence of private industry in space operations with the specific goal of allowing private industry to assume the primary role of providing services to NASA, and most immediately in accessing low-Earth orbit." In NASA decisions, "the preferred choice for operational activities must be competitively awarded contracts with private and non-profit organizations..." What a clarion call that is for a new direction.

The delivery of cargo in support of the exploration initiative would seem a real opportunity, particularly after the shuttle is phased out in 2010. We at the FAA firmly believe that the space transportation industry has the capability and innovation to meet the needs of NASA

as it works toward a return to the Moon and exploration of Mars, as well as to meet short-term goals at the International Space Station and in low-Earth orbit.

I truly believe the President's initiative will also open the door for more commercial and private sector opportunities to exploit the potential of space. In the past few months I have seen an understanding develop across the space community that we all need to move in the same direction if this vision is to be realized. Groups such as the Coalition for Space Exploration and the newly-formed Space Exploration Alliance aim to support the exploration initiative in a unified way, which is exactly what we need right now.

The FAA is also supportive of publicly-funded prizes, such as the NASA Centennial Challenges, which will lead to new technological developments and creative approaches to the problems posed by long-range space exploration.

All of this means that we must be fully prepared for this future. We must prepare the future workforce and lay the foundation for the business they will be engaged in. And that's a responsibility that goes to each and every one of us.

Before I leave you with some thoughts about my personal vision for the future, I want to emphasize this last point. I know that the Maryland Space Business Roundtable has as its primary goal to promote educational initiatives that will help to build the workforce for tomorrow, especially in the areas of science and technology. My host, Betsy, is personally involved as chair of the educational outreach committee. AST is also committed to supporting this goal through our own educational outreach program. Herb Bachner leads that effort in our office. We participate in the annual Space Day events, the Team America Rocketry Challenge, provide educational materials to various

organizations, and we most recently published a new education and outreach brochure, soon to be complemented by a new education Web site describing the skills needed for specific space careers. We are working with the Aerospace Industries Association on one of its top priorities, which is developing an action plan for revitalizing the aerospace workforce. In this effort, we are partnered with the Departments of Labor, Commerce, Education, NASA, and the Department of Defense. Reaching out to young people may be the toughest connection we have to make to promote the future of the space industry. But what an important challenge it is, which is why it is crucial for all of us - whether in industry, government, or academia - to speak with the same voice, and the same optimism, about space and the opportunities that await these future innovators. I welcome all opportunities for us to partner in this endeavor.

So, as I wrap up, I'd like you to think with me about the following questions: What will change - what will be different as a result of actions we take right now? Will different skill sets be needed in the future space sector? If so, what are they? What should space related businesses prepare for? Because it's coming.

If you will, please pause with me for a moment... and envision right here in the mid-Atlantic region an intermodal transportation system second to none - a transportation hub where air, land, sea, and space all converge. In this vision, heavy lifters like Cape Canaveral and other federal ranges work as part of a network with non-federal ranges (like the Mid-Atlantic Regional Spaceport) fed by civil, commercial and defense-related needs. Businesses - both manufacturing and service industries (hotels, restaurants, fuel providers, cleaning, tourist services) - thrive around the spaceport much like today's major airports. Routine missions to low-

Earth orbit and beyond occur on an hourly basis - taking advantage of the communications, navigation, and surveillance capabilities our military has to offer and are interwoven with a well-coordinated, real-time space and air traffic control system.

I can hear the announcement now: Now boarding, Experience space launch #102 to Moon Base 3. Final packages for space cargo to Alaska, launch pad C-15. What a day that will be. With the Air Force, FAA, NASA, and industry - organizations like Maryland Space Business Roundtable - all working hand-in-hand, this true National Aerospace System will become a reality.

Thank you very much for inviting me and I really enjoyed sharing this time with you.